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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,552	03/10/2004	Sthanunathan RAMAKRISHNAN	TI-36044	2551
23494 7590 10/31/2007 TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			EXAMINER HUANG, DAVID S	
			ART UNIT 2611	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/708,552

Applicant(s)

RAMAKRISHNAN ET AL.

Examiner

David Huang

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, with respect to the objection to the specification have been fully considered and are persuasive. The objection of 5/21/2007 has been withdrawn.
2. Applicant's arguments, with respect to claim 14 have been fully considered and are persuasive. The objection to claim 14 of 5/21/2007 has been withdrawn.
3. Applicant's arguments with respect to claims 1-4, 8-9, and 18-20 have been considered but are moot in view of the new ground(s) of rejection.

Specification

4. The abstract of the disclosure is objected to because of a typographical error on line 3 ("upto"). Correction is required. See MPEP § 608.01(b).
5. The disclosure is objected to because of the following informalities: page 5, [0020] contains a typographical error (missing word and space on line 8). The word "wellstructures" is assumed to be "well known structures".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. **Claims 1-23** rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Art Unit: 2611

In amended claims **1 and 8**, the added limitation “wherein each of said parameters has a corresponding value for each of a plurality of sub-portions of the respective signal portion received on each of said plurality of antennas” (e.g. claim 1, lines 12-13) is confusing since it is unclear as to whether it is applicant’s intention to indicate each parameter has corresponding value for each sub-portion of each signal portion on each antenna (i.e. each antenna receives a signal portion comprising multiple sub-portions, and generating a corresponding set of parameters for each sub-portion) or the “plurality of sub-portions” refers to the sub-portions received on each of the plurality of antennas (i.e. the plurality of sub-portions counts the sub-portion received on each of the plurality). For examination on the merits, the claim will be interpreted as the latter.

Claims 2-7 and 9-17 are dependent on claims 1 and 8, and therefore contain the same defects indicated above. The claims will be interpreted as best understood.

In amended **claim 18**, the “means for generating limitation” indicates that the first and third parameters represent a respective correlation of said non-payload portion, but then also indicates that the third and fourth parameters represent a respective strength of said signal received via said first and second antennas (lines 8-12). This is confusing since the third parameter represents two different entities and the second parameter does not represent anything. For examination on the merits, the claim will be interpreted such that the first and third parameters represent a respective correlation (as claimed) and the *second and fourth* parameters represent a respective strength of said signal.

Claims 19-23 are dependent on claim 18, and therefore, contain the same defects. These will be interpreted as best understood.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. **Claims 1-6, 8-14, and 16-24** are rejected under 35 U.S.C. 102(e) as being anticipated by Feng et al. (US 7,099,380).

Regarding **claims 1 and 8**, Feng et al. disclose a method (Figure 9) and receiver (Figure 8) for receiving a packet containing a plurality of data symbols, said method being performed in a receiver connected to a plurality of antennas containing a first antenna and a second antenna, said method comprising:

generating a corresponding plurality of parameters by examining a respective signal portion received on each of said plurality of antennas, wherein said signal portion corresponds to a non-payload portion of said packet, said corresponding plurality of parameters comprising a first plurality of parameters and a second plurality of parameters respectively corresponding to said first antenna and said second antenna (915, 920, Figure 9);

selecting one of said plurality of antennas based on said corresponding plurality of parameters (column 7, lines 19-21, Figure 8 and 950, Figure 9); and

Art Unit: 2611

receiving a payload portion of said packet on said one of said plurality of antennas (column 7, lines 55-60; 940, Figure 9; see also Figure 7; it is inherent that the chosen antenna receives the payload (data) portion of said packet),

wherein each of said parameters has a corresponding value for each of a plurality of sub-portions of the respective signal portion received on each of said plurality of antennas (column 6, lines 44-49; Figure 7).

Regarding **claims 2 and 9**, Feng et al. disclose everything claimed as applied to claims 1 and 8 above, and further disclose a first parameter contained in said plurality of parameters comprises a correlation value, and a second parameter contained in said plurality of parameters comprises a strength of said signal, said correlation value representing the similarity of said signal portion with a corresponding expected signal according to pre-defined protocol (805 and 815, Figure 8; column 5, lines 57-67).

Regarding **claims 3 and 10**, Feng et al. disclose everything claimed as applied to claims 2 and 9 above, and further disclose said generating generates a sequence of digital values corresponding to said signal portion, and wherein said corresponding expected signal is represented by a sequence of expected values according to a spread sequence protocol (column 7, lines 2-5; 805, Figure 8).

Regarding **claim 4**, Feng et al. disclose everything claimed as applied to claim 3 above, and further disclose said sequence of expected values comprises a spread spectrum sequence (column 7, lines 2-5).

Art Unit: 2611

Regarding **claims 5 and 11**, Feng et al. disclose everything claimed as applied to claim 4 above, and further disclose said spread spectrum sequence comprises a Barker sequence (column 5, lines 57-67).

Regarding **claims 6 and 12**, Feng et al. disclose everything claimed as applied to claim 2 above, and further disclose said generating comprise determining a gain factor necessary to amplify said signal portion to a first voltage level, wherein said strength is determined based on said gain factor (column 7, lines 21-25, Figures 8 and 9; column 1, 56-66, column 2, lines 18-25, and Figures 2 and 3; it should be noted that the cited section of the background provides details of inherent features of the SNR determination of the embodiment described in column 7).

Regarding **claim 13**, Feng et al. disclose everything claimed as applied to claim 12 above, and further disclose a switch coupled to all of said plurality of antennas, said switch connecting said selected one of said plurality of antennas to an end of a path under the control of said selector block (multiplexer 310, and decision block 820, Figure 8).

Regarding **claim 14**, Feng et al. disclose everything claimed as applied to claim 13 above, and further disclose:

an amplifier amplifying said signal portion received by said one of said plurality of antennas to generate an amplified signal (LNA 315, Figure 8);

an analog to digital converter (ADC) sampling said amplified signal to generate a sequence of sampled bits (A/D converter 335, Figure 8); and

a match filter examining said sequence of sampled bits to generate an encoded bit (correlator 805, Figure 8).

Art Unit: 2611

Regarding **claim 16**, Feng et al. disclose everything claimed as applied to claim 14 above, and further disclose said amplifier, said ADC and said matching filter are connected in another end of said path (Figure 8).

Regarding **claim 17**, Feng et al. disclose everything claimed as applied to claim 14 above, and further disclose said matching filter comprises a Barker match filter (column 2, line 66-column 3, line 2; see also column 5, lines 57-67).

Regarding **claim 18**, Feng et al disclose a device receiving a packet containing a plurality of data symbols, said device comprising:

- a first antenna and a second antenna, each receiving a same signal containing a non-payload portion and a payload portion (antennas 305, Figure 8);

- a receiver coupled to said plurality of antennas (receiver subsystem, column 2, lines 47-49; Figure 8), said receiver comprising:

- means for generating a first parameter and a second parameter by examining said non-payload portion received via said first antenna, and a third parameter and a fourth parameter by examining said non-payload portion received via said second antenna, wherein each of said first parameter and said third parameter representing a respective correlation of said non-payload portion with a corresponding expected signal, said second parameter and said fourth parameter representing a respective strength of said signal received via said first antenna and said second antenna (column 7, lines 41-46; AGC 345 and SNR 805; correlator 805; Figure 8; steps 915 and 920 of Figure 9);

Art Unit: 2611

means for selecting one of said plurality of antennas based on said first parameters, said second parameter, said third parameter and said fourth parameter (decision block 820, Figure 8); and

means for receiving a payload portion of said packet on said one of said plurality of antennas (column 7, lines 55-60; 940, Figure 9; see also Figure 7; it is inherent that the chosen antenna receives the payload (data) portion of said packet).

Regarding **claim 19**, Feng et al. disclose everything claimed as applied to claim 18 above, and further disclose said plurality of parameters comprise a correlation value representing the similarity of said signal portion with a corresponding expected signal according to a defined protocol (805 and 815, Figure 8; column 5, lines 57-67).

Regarding **claim 20**, Feng et al. disclose everything claimed as applied to claim 19 above, and further disclose said means for generating generates a sequence of digital values corresponding to said signal portion, and wherein said corresponding expected signal is represented by a sequence of expected values according to a spread sequence protocol (column 7, lines 2-5; 805, Figure 8).

Regarding **claim 21**, Feng et al. disclose everything claimed as applied to claim 20 above, and further disclose said sequence of expected values comprises a Barker sequence (column 5, lines 57-67).

Regarding **claim 22**, Feng et al. disclose everything claimed as applied to claim 19 above, and further disclose said plurality of parameters comprise a strength of said signal portion.

Art Unit: 2611

Regarding **claim 23**, Feng et al. discloses everything claimed as applied to claim 22 above, and further disclose said means for generating determines a gain factor necessary to amplify said signal portion to a first voltage level, wherein said strength is determined based on said gain factor (column 7, lines 21-25, Figures 8 and 9; column 1, 56-66, column 2, lines 18-25, and Figures 2 and 3; it should be noted that the cited section of the background provides details of inherent features of the SNR determination of the embodiment described in column 7).

Regarding **claim 24**, Feng et al. disclose everything claimed as applied to claim 1 above, and further disclose each of said plurality of sub-portions represents a corresponding one of said plurality of data symbols encoded in said signal portion (column 6, lines 44-57; Figure 7).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. **Claim 15** rejected under 35 U.S.C. 103(a) as being unpatentable over Feng et al. (US 7,099,380) in view of Butler et al. (US Patent 6,420,934).

Regarding **claim 15**, Feng et al. disclose everything claimed as applied to claim 14 above, but fails to expressly disclose wherein said first voltage level is determined by a range of operation of said ADC.

Butler et al. disclose increasing the VGA gains relative to the measured signal with very high, high, low, very low gain jumps so as to bring the AGC output level within the ADC nominal range (sweet spot) within one decision cycle.

Art Unit: 2611

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination applied to claim 14 to set the first voltage level based on the range of the ADC as claimed since it ensures the ADC is operating at the voltage level for which it was designed.

Allowable Subject Matter

12. **Claim 7** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Citation of Pertinent Prior Art

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lindsay et al. (US 6,085,076) teaches a similar antenna diversity communications system which uses preamble correlation and received signal strength indication to select a antenna (Abstract; column 10, lines 24-39; Figures 4 and 5).

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

Art Unit: 2611

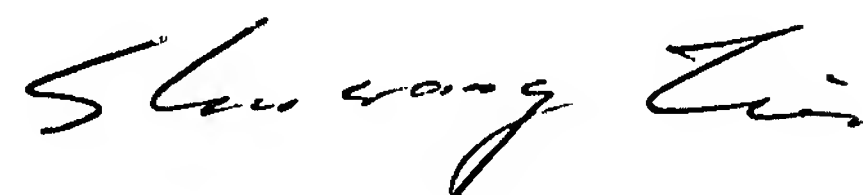
will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Huang whose telephone number is (571) 270-1798. The examiner can normally be reached on Monday - Friday, 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on (571) 272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DSH/dsh
October 23, 2007



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SUPERVISORY PATENT EXAMINER